

## Introduction to the special issue on IEEE-Latin American symposium on circuits and systems

Antonio Garcia Rozo · Maciej Ogorzalek ·  
Pedro Julian

Published online: 18 October 2012

© The Author(s) 2012. This article is published with open access at [Springerlink.com](http://Springerlink.com)

For the second time we propose a special issue of the Springer Analog Integrated Circuits and Signal Processing (ALOG) presenting the selection of best papers presented at the Second IEEE Latin American Symposium on Circuits and Systems (LASCAS 2010). The symposium was held in Bogota, Colombia 23rd to 25th of February 2011. The selected works represent important developments in electronic engineering at levels ranging from systems design methodologies to specific application circuits.

119 Papers from 27 countries were submitted to the conference. The review committee composed of 98 international experts accepted 62 papers and proposed a very interesting technical program presented in 11 sessions during the Conference. The main topics treated were: the high-level circuit design, CMOS digital circuit design, FPGA's application, and analog circuit design. This second edition of the IEEE LASCAS has been attended by 128 participants from Asia, Europe and Americas.

Of the papers presented in the field of Analog Circuits and Signal Processing, 11 papers presented in this Special

Issue were selected based on the evaluations of the Technical Committee members, the votes of participants and the respective session chairs; these papers were thoroughly revised and extended by the authors, and the final version of them are included in this issue.

These contributions are: (1) gate sizing using geometric programming; (2) optimizing transistor networks using a graph-based technique; (3) a multi-objective adaptive immune algorithm for multi-application NoC zapping; (4) analog circuit synthesis performing fast Pareto frontier exploration and analysis through 3D graphs; (5) synthesis and Comparison of low-power high-throughput architectures for SAD calculation; (6) design and characterization of a CMOS preamplifier for quantum well infrared photodetectors; (7) design procedure of a filter-antenna module implemented in substrate integrated waveguide technology; (8) mixed Cartesian feedback for Zero-IF WCDMA transmitter; (9) power efficient SDS motion estimation architecture using dynamic iteration control and hierarchical adder compressors for real time HDTV video coding; (10) hardware design focusing in the tradeoff cost versus quality for the H.264/AVC fractional motion estimation targeting high definition videos; (11) design of power efficient butterflies from Radix-2 DIT FFT using adder compressors with a new XOR gate topology.

This publication is an example of the interest of the global scientific community to find space to present their developments and provide a space for discussion anywhere in the world, and in this case supporting the creation of a world-class meeting of IEEE Circuits and Systems Society in Latin American territory thus supporting the rapidly growing scientific and technology developments in this region. This support was manifested in the collaboration of 267 volunteers, in partnership with the International Committee which evaluated the papers submitted to the

---

A. Garcia Rozo

Centro de Microelectrónica, Departamento de Ingeniería Eléctrica y Electrónica, Carrera 1 Este No. 19A-20, Bogotá, Colombia  
e-mail: [agarciarozo@gmail.com](mailto:agarciarozo@gmail.com)

M. Ogorzalek (✉)

Department of Information Technologies, Faculty FAIS, Jagiellonian University, ul Reymonta 4, 30-059 Kraków, Poland  
e-mail: [maciej.oigorzalek@uj.edu.pl](mailto:maciej.oigorzalek@uj.edu.pl)

P. Julian

Departamento de Ingeniería Eléctrica y Computadoras, Universidad Nacional del Sur, Av. Alem 1253, 8000 Bahía Blanca, Argentina  
e-mail: [pedro.julian@gmail.com](mailto:pedro.julian@gmail.com)

conference, ensuring high technical level of the event. We highly praise their contribution. We would also like to recognize the efforts of all session chairs who contributed not only to the successful accomplishment of the event but also helped to select the works that are published in this issue.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution License which permits any use, distribution, and reproduction in any medium, provided the original author(s) and the source are credited.



**Antonio Garcia Roza** received the electronic engineer degree in 1972 from the Javeriana University of Bogota, and the Diploma de Alta Gerencia in 1979 from Los Andes University of Bogota. He is actually full professor of Los Andes University and former director of the Microelectronics Center, CMUA, of the same University. He has been dean and associate dean of the engineering school (1982–1989) of Los Andes University, and head of Electrical

an Electronic Department (1979–1982). He is member of the executive comity of the IBERCHIP project and he is member of the advisory board of the Ibero-American Science and Technology Program, CYTED, in the TIC Research Area. He has also authored/co-authored more than 70-refereed papers in conference proceedings and in technical journals. He has published three books and two chapters in research books. His research interest areas are: high level system design, IC design, and technology and society studies. He is senior member of IEEE and has been president of the IEEE Colombian Sectional, chair of the Colombian CASS Chapter and president of ACIEM (Colombian Engineer Association).



**Maciej Ogorzalek** is professor of electrical engineering and computer science and head of the Department of Information Technologies, Jagiellonian University, Krakow, Poland—the oldest (1364) higher education institution in the country. He held several visiting positions in Denmark, Switzerland, Germany, Spain, Japan, Hong Kong. He received a research award from the Ministry of Education of Spain in 2000 and worked for 1 year at the

National Microelectronic Center, Sevilla, Spain. In 2001 he received a

senior award from the Japan Society for promotion of science as visiting professor at Kyoto University and in 2005 Hertie Foundation Fellowship at The Goethe University Frankfurt-am-Main. In 2006–2009 he held the chair of biosignals and systems, Hong Kong Polytechnic University under the distinguished scholars scheme. Author or co-author of over 280 technical papers published in journals and conference proceedings, author of the book *Chaos and Complexity in Nonlinear Electronic Circuits* (World Scientific, 1997). He gave over 40 plenary and keynote speeches at major conferences world-wide. He served as editor-in-chief of the *Circuits and Systems Magazine* 2004–2007, associate editor for the *IEEE Transactions on Circuits and Systems Part I*, 1993–1995 and 1999–2001, he was elected Member of the Editorial Board *Proceedings of the IEEE* 2004–2009. He serves also as an associate editor—*Journal of the Franklin Institute* (1997), secretary of the editorial board for the *Quarterly of Electrical Engineering* (1993–2000), member of the editorial board of *Automatica* (both in Polish), and member of the editorial board of the *International Journal of Circuit Theory and Applications* (2000). Dr. Ogorzalek is IEEE fellow (1997). He served the IEEE circuits and systems society in various capacities including VP for Region 8, Administrative Vice-president and finally 2008 Society President. He was CAS Society Distinguished Lecturer (2004–2005) and received the 2002 Guillemin-Cauer Award, IEEE-CAS Golden Jubilee Award and IEEE CAS Meritorious Service Award.



**Pedro Julian** received the “Ingeniero Electronico” degree in 1994 and the Ph.D. degree in “Control de Sistemas” in 1999, both from Universidad Nacional del Sur (UNS), Bahia Blanca, Argentina. He was visiting scholar at the University of California at Berkeley from 2000 to 2002 and at Johns Hopkins University from 2002 to 2003. He holds positions as an Associate Professor in the Departamento de Ingenieria Electrica y Computadoras

(DIEC) at UNS and as an Adjoint Researcher in the National Research Council of Argentina (CONICET). His research interests cover theory and applications of computational circuits and systems, parallel implementation of Cellular Neural Networks and Cellular Automata, and acoustic and visual processors, with emphasis on the design and analysis of VLSI systems and low power systems. He served as the Region 9 (Latin America) Vice President in the Board of Governors of the IEEE Circuits and Systems Society from 2004 till 2007. He is a founding member of the Latin American Consortium for Integrated Services (LACIS) and the Argentine School of Microelectronics (EAMTA).